



# Usage of Reference Management Software at the University of Torino

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## 1 Introduction

### 1.1 The practice of reference management in digital libraries

In today's scientific research and production, the practice of bibliographic citation management and "backward chaining" (Palmer, Tefteau, and Pirmann 11) can be managed by dedicated software tools, commonly known as 'Personal bibliographic softwares', 'Bibliographic Citation Management Software', 'Citation managers'. Following the Telstar definition,<sup>1</sup> the term "Reference Management Software" will be used (from now on shortened in RMS). According to Telstar's definition, RMS have two main functions:

1. building a database of citations to organize the documents useful for one's research;
2. formatting bibliographies and citations when writing papers through plug-ins or add-ons for Word processing software.

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<sup>1</sup><http://www.jisc.ac.uk/whatwedo/programmes/institutionalinnovation/telstar.aspx>.



Today's packages offer advanced features which vary from software to software, from the PDF storage and organization to including ways for annotation and sharing of data. The most prominent feature relates to the very nature of a "global information infrastructure" (Borgman) as a place of continuous and seamless interaction and integration: citations are shared, discussed, commented, suggested within members of the scientific community. RMS can act as a virtual research environment, or a platform for a "collaboratory" (Bos; Voss and Procter), sometimes adopting the features of virtual web collaboration networks, such as academic social bookmarking (Alhoori and Furuta; Fourie).

## 1.2 Research Questions

This study was conducted in 2012 within a master thesis project, whose topic was the inquiry of the role of RMS in a large academic institution such as the University of Torino, Italy. The research questions are:

1. what level of awareness about RMS exists in the members of the University of Torino?
2. what are the major trends in the usage of the RMS among the scholars?

The research's specific aims are:

- to explore and to understand the measurements about the actual awareness and usage of RMS;
- to understand the context in which scholars operate when dealing with citations and literature management;
- to provide evidence-based information upon which libraries can base their strategies about services, assistance, training.

### 1.3 The stage of the research: the University of Torino

The University of Torino (Università degli Studi di Torino, from now on shortened in UniTo) is one of the largest public universities in Italy, counting a population of 70000 students and 2000 faculties.<sup>2</sup>

In January 2008 UniTo, after solicitations by a group of professors, purchased 347 licenses for the software EndNote X1, to be distributed among those faculties who expressed a declaration of interest. The software was already known and used, but it was purchased by individuals, not by the institution. The largest group of users was constituted by the Biomedical Faculties (40%) followed by scientific areas (18%). All other disciplinary fields have been covered by less than 10%. Training sessions on the software gained a moderate participation ( $\frac{1}{3}$  of the people involved in the distribution opted for a training session). In 2010 the licenses were not renewed due to two reasons: the lack of money and the technical difficulties posed by the new versions of the softwares (lack of compatibility with older operating systems, difficulties in upgrade, bugs, etc.).

## 2 Literature Review

Literature about RMS focuses mostly on the technical analysis of the features offered by the software packages<sup>3</sup>(Gilmour and Cobus-Kuo; Childress; Butros and Taylor; Hensley and Kern). An important look is given at the reliability of these tools and the proper training needed by users: the papers by Fitzgibbons and Meert ("Are Bibliographic Management Software Search Interfaces Reliable? A

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<sup>2</sup>The data exposed in this section are taken from the University's Programming Plan 2007-2012, and are updated at the academic year 2010-2011. See: <http://www.unito.it>.

<sup>3</sup><http://www.burioni.it/forum/dellorso/bms-dasp/text/index.html>.

Comparison Between Search Results Obtained Using Database Interfaces and the EndNote Online Search Function”) and Van Ullen and Kessler (“Citation Generators: Generating Bibliographies for the Next Generation”) point at the role of reference librarians in providing information and support on managing bibliographies and citations. RMS can be looked at from the perspective of the users’ behaviour and their relationship with other digital research tools, such as virtual environments. In their paper about the approach to digital libraries by researchers, Hull, Pettifer and Kell consider RMS as instruments that could enhance both personalization, social networking and collaboration, integration and accessibility (Hull, Pettifer, and Kell).

Giglia and Hane both point out the novelty and the potentials of the social networking solutions specifically addressed to the academics: “some social networks have been created and tailored to scientists’ needs, in order to make them find researchers with similar interests or expertise, to keep in touch with their peers, to share their information” (Giglia). Haglund & Olsson (“The Impact on University Libraries of Changes in Information Behavior Among Academic Researchers: A Multiple Case Study”) find that Swedish researchers do not have deep knowledge of the up-to-date digital tools that could enhance research and information management. A similar lack of awareness is shown by Ollé & Borrego: according to their study at Catalan Universities, researchers «described their techniques as “primitive” or “rudimentary”». Only 25% of their sample use some kind of personal bibliographic tool (Ollé and Borrego 51). In their survey conducted in 5 American universities, Niu et al. find that “information-seeking and information-handling habits of researchers are very personal” and inconsistent behaviours can emerge, even though the usage of a RMS is widespread. The activity of “sharing information within laboratories or groups or

among multisite collaborations”, using tools like RMS, is seen as a potential evolving practice (Niu).

The studies above state that the usage of specific reference management tools is scarce and inconsistent. Yet few quantitative data are provided: Steele claims that “citation management softwares have existed since 1980 and are widely used today” (Steele 463), but doesn’t give any reference for that. A survey at the Tallin University, Estonia, in 2011 (Francesca) showed that the usage of these tools is low and not supported by a proper knowledge: scholars seem to be not fully aware about the potentials and the features of the RMS. Several papers indicate the active role that libraries can take about this subject (East; Siegler and Simboli; Martin). Childress considers the RMS in a practical perspective, studying them within the researchers’ needs and workflows, and reflects about the supporting role that libraries can have (Cooke). According to East, the big effort in support and training given by his institution would be a key strategy for the future, and it will require big investment in staff resources: “the role of the academic librarian in general is evolving into a much broader function, particularly as regards the new and emerging information technologies” (East 70). The potential role of libraries is also confirmed by Crowley and Spencer: “Libraries also need to make their [i.e. the researchers’] research management and collaboration tools such as EndNote, EndNote Web, Zotero and RefWorks easily available, and ensure that all search interfaces incorporate a straightforward citation export function” (Crowley and Spencer 216). McMinn finally pushes for deeper studies on the topic: “There are a number of reasons why it is important to examine the different approaches research libraries take in providing similar services: ensuring that the services provided are consistent with those of peer institutions; determining how services have been tailored to meet the unique needs of different institutions; determining the

level of support and optimum allocation of resources” (McMinn 279).

### 3 Methodology and Method

This study aims to provide new essential informations on a relatively unexplored subject, with the goal of providing background for future understanding and comparison. To do so, the chosen method is a descriptive survey performed with a qualitative approach. Data were collected in two ways. An online questionnaire composed of 17 questions collected the measurable quantitative informations. 13 interviews were then conducted on a sample of the population to deepen, enlighten and circumscribe the data collected through the questionnaires with the aid of qualitative informations. Interviews were designed as “guided interviews” (Patton 202), or, to use the more precise terminology adopted by Corbetta, “semi-structured interviews” (Corbetta 198): a list of 8 “threads” was prepared, each of it being expressed through one or more questions. Interviews were performed in presence, face to face, recorded and transcribed. Data were collected anonymously: each respondent was labelled by a number, and no connection between the data and its identity was made. This study adopts the “constant comparative analysis” method (Strauss and Corbin). Concepts were identified as the data were being collected and linked together under 7 topics discussed in the end. The dimensions and the variety of the population of the University of Torino, required the choice of a focused disciplinary area. The literature review seemed to suggest that the health sciences and bio-medical areas are the most sensitive to the RMS features (Lawrence and Ashwell). Different key informants within UniTo confirmed this. The questionnaire was therefore addressed to professors, researchers and PhD students from the STM departments of

UniTo. An email with an introduction to the research and the link to the online form was sent to a mailing list of 1031 addresses. To select the interviewees, the availability was asked within the questionnaire, then a snow-ball chaining was performed across each respondent. In the end, 13 interviews were collected; respondents represent all the scientific areas questioned.

### **3.1 Limitations and caveat**

The selected sample is only a subset of all the disciplinary fields covered at UniTo. Therefore its globality and heterogeneity are not wholly represented. The participation rate also can hide some clue to the faculties' interest or awareness about RMS. Although this cannot be proved, it is very likely that people very interested in the topic are more eager to participate in the survey, not to mention the interviews. This should be taken in account when reaching the final conclusions. Suggestions or expectations expressed in the interviews came mostly from active RMS users than from supposed non-users. This can become evident when cross-referencing the results from the questionnaire with those from the interviews. Conclusions risk to be unbalanced due to the nature of the sample.

## **4 Data results**

### **4.1 The questionnaire**

#### **4.1.1 Response rate**

The questionnaire collected 187 responses, reaching a response-rate of the 18,13% of the initial recipients. The academic roles are equivalently divided among researchers and professors (42% and 38%), with a 6% of PhD students and 15% of other roles (postdoc, research

fellow, lab assistant). The age of the respondents is also quite equi-  
librate: the majority is represented by people between 35 and 45  
(37%).

### 4.1.2 Awareness and usage

The first important result is the general awareness about reference  
tools (figure 1) only 8% of the respondents declare to not know any  
software.

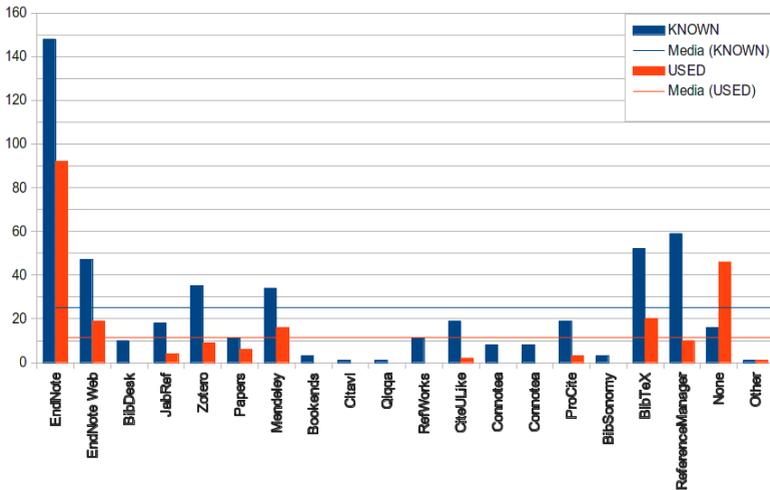
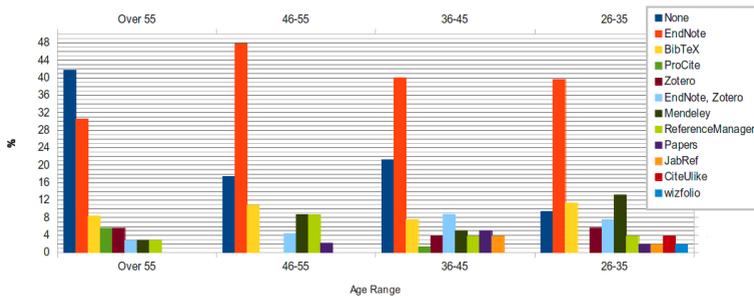


Figure 1: Knowledge and usage of softwares.

EndNote proves to be the best-known software: 79% of respon-  
dents know or heard about it, and among these, the 25% know about  
its web counterpart EndNote Web. Only 2 other softwares reached  
the 25%: BibTeX (28%) and Reference Manager (32%). All the others  
seem to be mostly ignored; Zotero and Mendeley obtain 19% and  
18% respectively, and the rest are from 10% under.

Data about usage show a more extreme trend. The non usage is relevant: 24%, almost a quarter of the sample. Usage of EndNote doesn't reach the half of the sample: barely 49% is the number of actual users, and just 10% also use EndNote Web. Of all the other softwares, only two are around 10% (BibTeX 11%, Mendeley 9%). It is remarkable the narrower set of softwares indicated in this answer: most tools obtain 0 responses.

The software distribution among age-ranges (figure 2) show how the percentage of non-usage is higher among older scholars (42% for the over 55), and very low among younger (9% among people from 26 to 35).

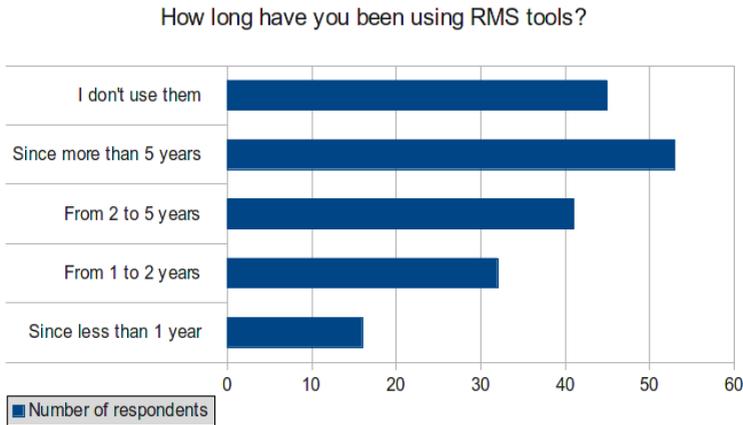


**Figure 2:** Percentage of software distribution per age (under 26 is excluded due to low sample).

The largest slice of members (53 respondents, 28%) is of long-time users (figure 3 on the following page).

### 4.1.3 Reasons and behaviour

Informations about user behaviour and the reasons behind are analysed through the interviews to be better understood. From a numeric point of view, we see that the most relevant reasons behind the



**Figure 3**

choice of a software indicate a sort of passive behaviour (figure 4 on the next page): softwares are mostly used because provided by the institution (33%) or used by the rest of the community (41%). While the community has a strong role, external information hasn't: only 2% chose a software after reading about it in journals or magazines.

Gratuity and open-source collect different responses: while the 16% pays attention to the freedom-of-cost, only the 7% cares about the license behind it.

From a quantitative point of view, usage of RMS varies: the number of citations saved ranges from less than 50 to more than 1000, with the highest numbers on the middle range (figure 5 on page 156). Figure 6 shows interesting data about the general approach to the tool (figure 6 on page 156). The most used features are the basic ones: editing (55%) and pasting (66%) the citations when writing the paper. Sharing citations is not a relevant activity (13%). Almost non existing is the usage of the RMS as a way to discover new references

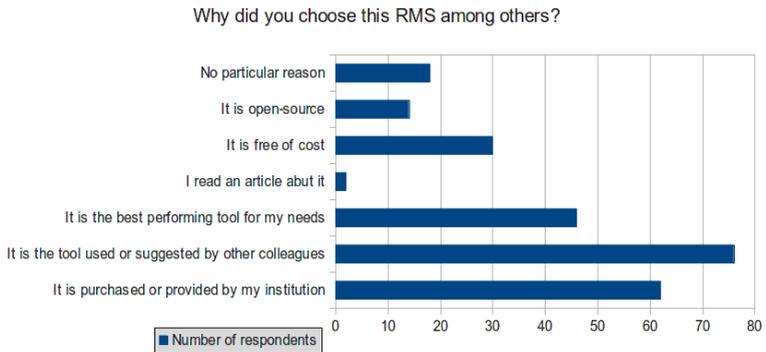


Figure 4

(2%) or connecting to other colleagues on the web (0%).

#### 4.1.4 Training and support

Only 6% of respondents declared to have followed training sessions (figure 7 on page 157). The library seems external to these needs: only 13% of respondents state that they received help by the library in using the RMS, and they generally refer to the EndNote distribution of 2008 (figure 8 on page 157).

Of the 162 "no", 28 provided details, admitting that they just "never asked", or "never heard about any initiatives". When asked if they ever suggested the tool to other colleagues, the majority replied "yes" (63% against 37%: see figure 9 on page 158). The opposite happened towards the students: only 38% of respondents declare to have suggested a RMS to students (figure 10 on page 158). This answer comes from any type of academic role (professors, researchers, postdoc, research fellows, etc.)

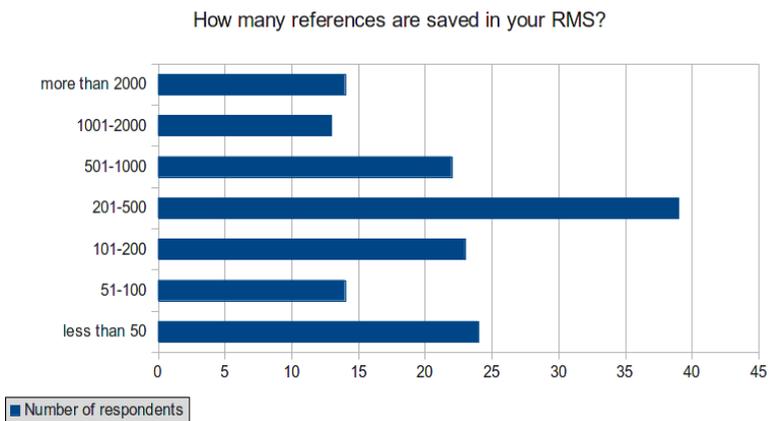


Figure 5

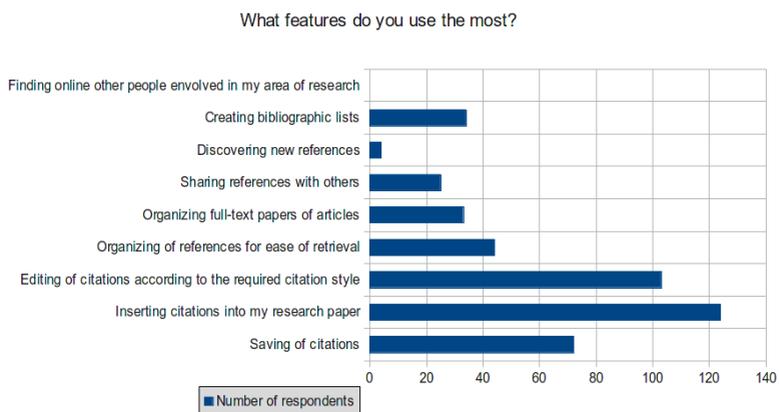


Figure 6

Have you ever attended a course or a workshop about RMS?

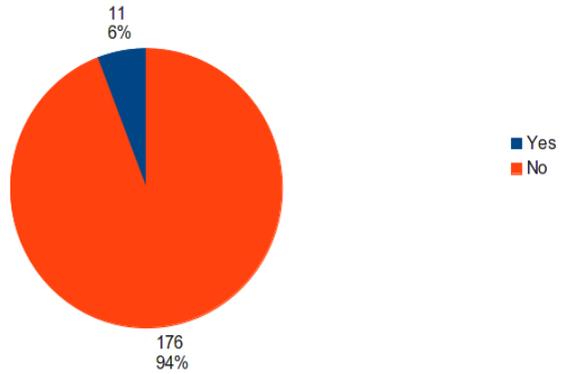


Figure 7

Did you get any support by your library in using RMS?

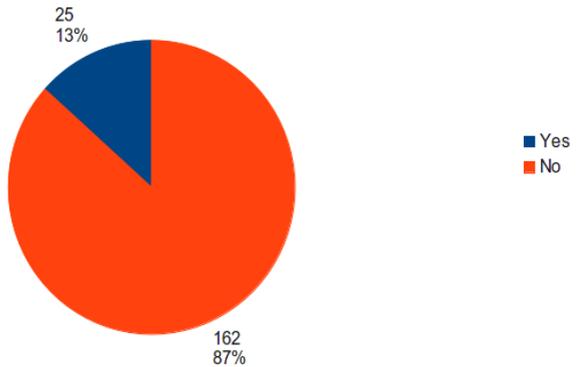
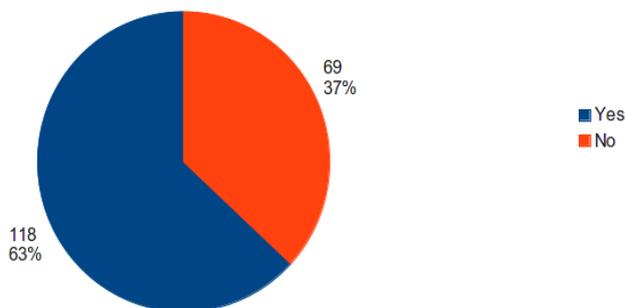


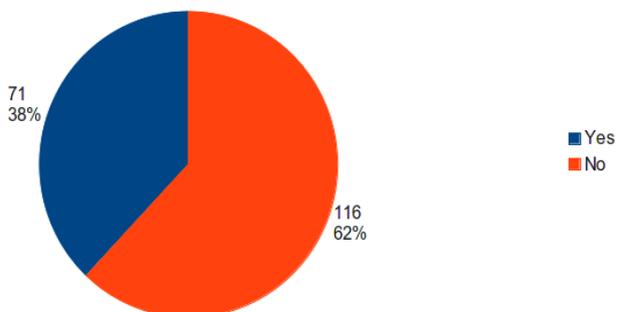
Figure 8

Did you ever suggest the use of RMS to other colleagues?



**Figure 9**

Did you ever suggest the use of RMS to students?



**Figure 10**

## 4.2 The interviews

### 4.2.1 What are your general knowledge and experience with RMS?

Respondents admit to use softwares in a very practical way to satisfy a very present need. Users never explore the most sophisticated features. Almost all respondents point out how crucial is the time factor in their work; for this reason there is no way to develop a strong mastery in the software. Some call it "laziness": "there is a particular laziness in every researcher: if something works, you don't feel the need for something else" (resp. 03). Easy and rapidity of use is highly valued: "When you are used to a certain product, you need a substitute with a very low learning curve" (resp. 05); "The reason I never change is one: habit. Upgrades are too much of a burden" (resp. 07).

Most respondents make clear that they seldom move away from a used and known product to discover or try a new one, and when they do they rarely feel satisfied. "I downloaded and installed 2 products, but I uninstalled them very soon: I did not understand them, I felt them unfriendly, they did not do what I needed" (resp. 10). Sometimes change is hard even when the software used has evident flaws: "EndNote is good and very powerful, but it has a lot of problems, it's heavy on your system, it needs high requirements and is extremely hard to move it across different platforms" (resp. 05).

A software is often chosen because already used or suggested by other colleagues (resp. 04: "I started using Reference Manager because it was used by a colleague with whom I worked when I was in another university") or because it's dominant in the community (resp. 03: "I use EndNote and ReferenceManager, because it is already available to all of us here in the lab, or because it is acquired

by your superior"). The technological context is also a key factor: according to the operating systems and word processor used, the most compliant software is adopted: "In physics, we all use LaTeX, so BibTeX comes naturally" (resp. 00).

It is interesting in this matter to note how EndNote was often already in use before the institutional purchase made in 2008. The institutional purchase just allowed the diffusion of more legal copies, removing the cost burden from the individuals and the departments.

Only two respondents adopted a different choice from what they found already available: instead of taking advantage of the available copies of EndNote, they sought different solutions. One because of the compliance with her system: "I decided to use Zotero because it works on Linux" (resp. 06); the other because of reasons related to the proprietary nature of EndNote: "I believe that in the university world we should use non proprietary software, so I looked for open-source - or at least free of cost - alternatives" (resp. 12).

#### **4.2.2 What is your research workflow, and how does the RMS fit into it?**

With the obvious differences due to disciplinary fields and community practices, all respondents show how strongly the RMS is related to the research and writing work-flow.

The research work-flow doesn't vary much among the respondents: a team leader usually wraps up all the contributions by the different collaborators and edit the final draft to submit to a journal. This sometimes explains the reasons behind the non-usage: when a researcher is not the project coordinator he doesn't take part in the bibliography editing: "Generally the supervisor actually writes the final paper, while we just run the experiments and collect the data" (resp. 02).

### 4.2.3 How do you consider virtual collaboration?

The approach towards systems of virtual collaboration is almost non-existent. The only forms of virtual collaboration happen in a very traditional way: through email, sometimes through some sort of peer-to-peer communication system (such as Skype). Scholars often use cloud-based shared folders systems, like Dropbox, to share journal papers. One first reason is the lack of knowledge about the possibility itself to virtually collaborate with other colleagues. An interviewed (resp. 12) was a declared Mendeley user, but strangely he did not know about the social features which are the very heart of Mendeley.

Respondents showed a sort of diffidence about building an online presence to connect with other colleagues around the world through dedicated scientific networks. One is very clear: "It is impossible: in science, when working on the same subject, you either cooperate, or you compete. If you collaborate, it comes naturally to work with daily tools; if you compete, you are very careful not to put reveal, anticipate, or share your data" (resp. 03). Another one has the same opinion, even though a little more open to possibility: "There is no such thing as a virtual Alexandria. Data exchange is daily done within small groups" (resp. 09).

Only one respondent gave a very different opinion: "Collaboration is fundamental: our job is always been based on collaboration on an international level. An online tool, cloud-based, through which I can invite other people to contribute to an online list of references, would be of utter importance" (resp. 10). Another respondent shares this conception of science as an international collaborative endeavour, and looks positively to web platform that can act as a showcase for the scientific production: "I believe these sort of things - social networks, forums for mutual assistance - are very useful and interesting. It is very useful to be present and visible on the web

to communicate, to share informations, to ask questions to more experienced people" (resp. 11).

#### **4.2.4 How much do you consider RMS as a fundamental tool for the academic work?**

This direct question, aimed to probe the perceived importance of the tool across all the different ways of usage, gained a wide range of responses. One interviewed was a complete non-user of RMS, and provided an interesting chemistry-related metaphor to explain the reason: "I apply a principle of chemical kinetics: if you want to speed up a reaction, you have to modify the slow part of the process. I believe that in writing a research paper, the 'slow part' is not the reference management" (resp. 09). On the opposite scale, another respondent said: "They are absolutely essentials. It is crucial for the credibility of a paper to display properly formatted citations. I insist a lot on the reference check in the works of my group" (resp. 11). A middle-ground response is the following: "Nothing is really 100% essential; on a scale of importance from 1 to 10, I would deem the RMS as 8" (resp. 12). Ultimately, the importance of the instrument, considering these nuances, is generally considered high.

#### **4.2.5 Have you ever suggested its usage to colleagues or students?**

This two-sided question was made to understand the correlation between the user and his context, and see how the RMS is a node in a network. We saw that most people use a software because suggested by other colleagues, or because part of the work-flow of the labs or departments where they worked some moment in their career. The reverse action happens in the same way. Some suggest the usage of a tool when they have to coordinate a research group:

"I always suggest to use EndNote to those who collaborate with me, because I don't want to waste time in fixing citations" (resp. 10). There is always a very practical reason behind the behaviour: the topic is brought in when the need arises among people who need to collaborate; it is a rare topic of discussion among them outside the practical activity.

Somehow different is the approach towards students: respondents seem to be cut in two groups, those who consider essentials for students to learn how to use a RMS in the beginning of their career, and those who think that, before the PhD, students do not need such knowledge. "I always suggest to use a RMS, but I leave liberty of choice. This is helpful because it saves a lot of work to do in the end" (resp. 06); "You learn by doing. Generally I think it is useful to learn at the early stage of the career, as a sort of literacy" (resp. 03).

Other responses underline an opposite vision. "Master students already have many difficulties to face; introducing a sophisticated software like a RMS would be adding more trouble" (8). "I tried to explain the functions of RMS to students, but with no success" (4). This is often related to the actual need: "for a master thesis students don't need to handle so many citations to justify the learning of a specific tool" (5). Another response considers RMS as less important than other tools: "I would rather spend time to explain how PubMed works" (resp. 07).

#### **4.2.6 What kind of support does the library give you? What kind of role do you expect from it?**

Since one of the purposes of the present study is to help libraries to understand what libraries can do to assist their members in reference management, this was a key topic touched in the interviews.

When asked about their relationship with their academic library,

answers were generally like: "Libraries have disappeared from my life" (resp. 11); "I never go to the library: I do everything online, and if I need something more, I ask to colleagues and friends from other universities" (resp. 03). "We turn to the library staff only when we need documents not available online" (resp. 01). However, the importance of the digital library infrastructure is recognized: "I don't step into the library any more, but the library provides access to all the online resources I need" (resp. 09). Sometimes this infrastructure is invisible, and scholars do not realize what is there behind the online access sometimes the content available online is considered as just "free" (resp. 01).

About the RMS, some libraries just provided the licensed copy of EndNote, some support information, and not much more. This doesn't mean that the library service is judged negatively: a researcher explained: "I never asked for assistance, even though I know they are very kind and professional; I just prefer to overcome the difficulties by myself" (resp. 04).

About the possible role for libraries, a respondent gave an interesting answer: "Libraries cannot be just the keepers of knowledge any more. I know a lot of librarians who are willing and able to assume a more active role in the research process. But the institution must support this with proper funding and resources" (resp. 05). Other respondents wish for a more active role by the library: "Library could be very important in setting a standard within the institution; so far it never had this role, but it would be important if it starts having it" (resp. 10).

Other respondents show how low is the level of acquaintance with the library staff, therefore how distant are the libraries to some of their community members. This sort of "assumption" is confirmed by other respondents, who say "I don't know if they can provide help" (resp. 08) or "It's something I never thought about" (resp. 09).

#### **4.2.7 Are you interested in training, support or information initiatives?**

Most respondents reveal to be self-taught about these tools. Some consider themselves fine with this, and do not feel a deep need for special training about RMS. Others recognize their need for a specific and structured training. In general, training sessions, support initiatives and any sort of communications are considered welcome by almost all, despite their role or experience.

A common point of view emerged from all the respondents: training and information sessions have to be extremely practical and to-the-point. Nobody is interested in introductory sessions, generic informations, or such. They need to learn how to do things, how to solve the problems they face in their work. Their amount of time to dedicate is too small. This is the only factor which is always underlined, often with dramatic tones.

#### **4.2.8 How do you value open-source when selecting such a software?**

The RMS landscape shows a sort of competition between commercial-closed and open-free products <sup>4</sup> The main difference perceived is about money, not about technology. When asked if they ever consider an open-source software, respondents always interpreted it as choice between an expensive software and a free one. Sometimes the interviewed did not even seem to have a clear distinction between the two concepts of open-source and free-of-cost. Reliability and ease of use are the main aspects considered for a software: "It must be stable and performing, otherwise it makes no sense" (resp. 08);

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<sup>4</sup>See for example the legal dispute between EndNote and Zotero: <http://www.ncbi.nlm.nih.gov/pubmed/18843308> and <http://quintessenceofham.org/2009/06/04/thomson-reuters-lawsuit-dismissed>.

"Free software are interesting also because they are easy: easy to obtain, to distribute, to copy, to patch, to upgrade. Limits put by commercial licenses push towards piracy" (resp. 10).

Other respondents gave extremely clear replies about the importance of open-source: "I believe the university must move on the open-source ground not for economic reasons, but because it's in its nature. What counts is the sharing and participation culture. I think that a researcher must have a wider vision of things: I always try put a conscience in what I do, thinking about the cause and impact of my actions" (resp. 12). "I consider open-source, not only because it's free of cost. I consider it as an element of evaluation: I never suggest to use closed products, because it creates difficulties in sharing products, data, contents" (resp. 06).

It is nice to see some clarity about the link between sharing science and sharing technology: "I am interested in the idea of open-source: I like the fact that people cooperate as a community without a business view, especially in the academics where knowledge has to be shared" (resp. 04); "We work in scientific research without commercial purposes: it is hard for me to accept the idea of producing knowledge for an economic payback" (resp. 03).

## **4.3 Analysis and discussion**

### **4.3.1 Awareness and usage distribution**

Awareness is relatively high in terms of quantity: 92% of people know about RMS. It is low in terms of quality: very few are the known softwares. The percentage of actual users is a little lower: 75% of the respondents are active users. It can be openly said that RMS are widely used across UniTo, although the 25% of non-users constitute a sack of resistance not to be underestimated. The questionnaire clearly declares EndNote as the most used software, fol-

lowed by a very low range of alternatives: Mendeley, BibTeX, Zotero, Reference Manager, all of them with incomparable low numbers.

### **4.3.2 Basic practical approach**

RMS are used when needed (when writing a paper which requires a reasonable number of references) and they are used in their basic functions. This explains the numbers emerged in the questionnaire, which shows a very basic need underlining its usage. Participants in the survey do not show interest in the technological implications of the tool, as long as it works fine. This leads to be closed against additional extended features, or to paradigm changes: the ignorance about the world of virtual science and networking collaboration explains how little today scholars are aware of the opportunities provided to scientists by the web environment.

### **4.3.3 Time factor**

One concept emerges very strongly from the interviews: time is a crucial factor in everything. Everything in the process must speed researcher's work and save time. This applies to all the aspects: choice of a software and discovery, deep knowledge of its functionalities, training and learning sessions. This also explains the numbers of the questionnaire: few softwares known or used, basic functionalities used, little contact with the library asked or desired etc. It is worth noticing that although citation management is often rooted in the research process, it is often perceived as an element of minor importance. It is also true, on the other hand, that a more proper training on RMS could help saving time: some interviewees point to this when considering the benefits of such skills.

#### **4.3.4 Habit**

A general laziness, or force of habit, prevents change. This attitude, openly admitted but the respondents, prevents scholars to discover new products or new features. When a RMS is used, generally it's because a former experience by some colleagues proves it useful: it seems unlikely that someone is willing to experiment something new on his own. When this happens, it generally leads to frustrating and unsuccessful experiences. The numeric data are made stronger by the responses to the interviews, which show how low are the range of softwares actually used and the curiosity for different alternatives, due to the time and need factors discussed above. Finally, the fact that the University acquired and distributed licenses of EndNote made the faculties stick with this software without worrying about other alternatives. Now that the licenses are not purchased any more, it will be interesting to see how scholars will change their approach.

#### **4.3.5 Economic issues**

Economic issues are always important, even when selecting a software. Everything that can save money is welcome: this applies to softwares as well.

Yet this seems true more on the intentions than in the practice: the economic issue is stressed by all the interviewees, but only 16% of the participants in the questionnaire actually indicate it as a reason of choice. The habit of already-in-use tools is stronger than the need to move on better instruments. Often the economic constraint is not strong enough to push people to experiment alternatives. More general implications of a software license, such as long term costs and technological impact, are not considered, as shown by the general lack of awareness on the open-source topic.

### 4.3.6 Training and literacy

If we compare the answer to the questionnaire, which says that 87% never received or asked any support, with the interviews responses, which show how basic is the general knowledge of the tools and their functionalities, it is clear how much impact has the lack of specific training. Even if not stated explicitly, there is need for training and literacy. Results clearly show how low is the awareness because scholars do not know RMS at all and do not have time to go deeper and improve their skills beyond the self-taught basics.

There are no common practices in the training to RMS: the usage of a RMS is more part of a "tacit knowledge" present in the research environment, rather than a conscious part of the set of skills and methods of a researcher.

It is remarkable how every concept examined so far - shallow knowledge, time constraints, economic awareness - can be considered within a set of aimed training initiatives.

Given this, any kind of training must be tailored to the actual needs. If RMS serve the purpose of facilitating the research process and saving time, any training on it must not go in the opposite direction.

Students might benefit from a specific training in RMS as part of their academic information literacy. The strong stress given by some interviewees about this, nevertheless, doesn't match with the percentage of those who actually suggest a RMS to their students (38%).

### 4.3.7 Library role

Librarians, as information experts, must have a more active role in RMS support. But this role must be considered in the more general context of the library impact in a community. The survey shows that

library staff skills are mostly not perceived, therefore scholars are alone when they face reference management issues. This creates a separation between the library and the academics instead of bringing a mutual dependence.

There is a lot of room for the library to be active in this process. Responses let emerge needs such as: information, training, guidance. Library is not the keeper of resources any more, but also the keeper of bibliographic tools. RMS require a lot of time and skills that researcher seldom have; a professional expert in these tools could help the scholars guiding them across the wide range of packages, across the basic functions, focusing on problem-solving activities. This could be an extremely cost-benefit effective initiative. If the library assumes the role of information assistants and technology experts, it can be the link between the world of technological information solutions and researchers' needs.

This considerations confirm what is said in the literature. East already noted the relationship between bibliographic support and reference management training. He recognizes "the well-established role of the library in training researchers in searching electronic databases and downloading retrieved references. From here it was only a short step to beginning to train researchers in the management of those references" (East 65). This has not happened yet at the University of Torino, but the survey suggests that it should, and that a loud call for a new commitment is given.

#### **4.4 Conclusions**

This survey confirms the wide presence of RMS in scholars' research work-flows, but it points out the lack of information about it. RMS features, from the basic reference management to the advanced virtual collaboration, are adopted much below their potentials. Scholars rely on common practice and word of mouth rather than on

specific training upon the tools. The general users' behaviour confirms what other studies proved: information-handling habits of researchers are personal and often rudimentary. In this area, information professionals in libraries have a great chance to assume the role of assistants to improve researcher's efficiency in managing the literature.

The data collected refer to a specific area of a single Italian university. Further studies should perform the same type of inquiry in different settings and provide a wider cross-institutional analysis.

Also, having proved that habit is a strong factor, searching for patterns of behaviour among different age ranges could lead to important understanding on how the phenomenon is likely to change in the next future. The technological development could have a key role in this, and it should be monitored closely.

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**ABSTRACT:** The present research, originally a master thesis, aims to investigate the popularity and usage of Reference Management Softwares among researchers and scholars of the University of Torino, Italy, and the role that university libraries can assume about the subject. This study, based upon a qualitative approach, is a descriptive survey composed of an online questionnaire and direct interviews addressed to the population of professors and researchers of the STM areas at the University of Torino. A qualitative analysis was made across the 187 responses from the questionnaire and the 13 interviews performed. 7 key concepts were outlined and discussed. The knowledge of Reference Manage Softwares is high among the respondents, but their adoption is not. EndNote is the most known and used software, while other alternatives are more scarcely considered. Scholars, hindered by time issues, rely on old habits and are very unlikely to discover new ways to manage the literature they need. Virtual collaboration is absent from the common research practice. The research gives light on the users' behaviour in a large Italian university, confirming the results provided by the literature. Librarians should assist scholars by providing informations and support about the proper tools to improve the research process.

**KEYWORDS:** Academic libraries; Citation management; Reference management software; User behaviour.

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